



# **Formation of Gas Hubs: Pricing and Risk Management**

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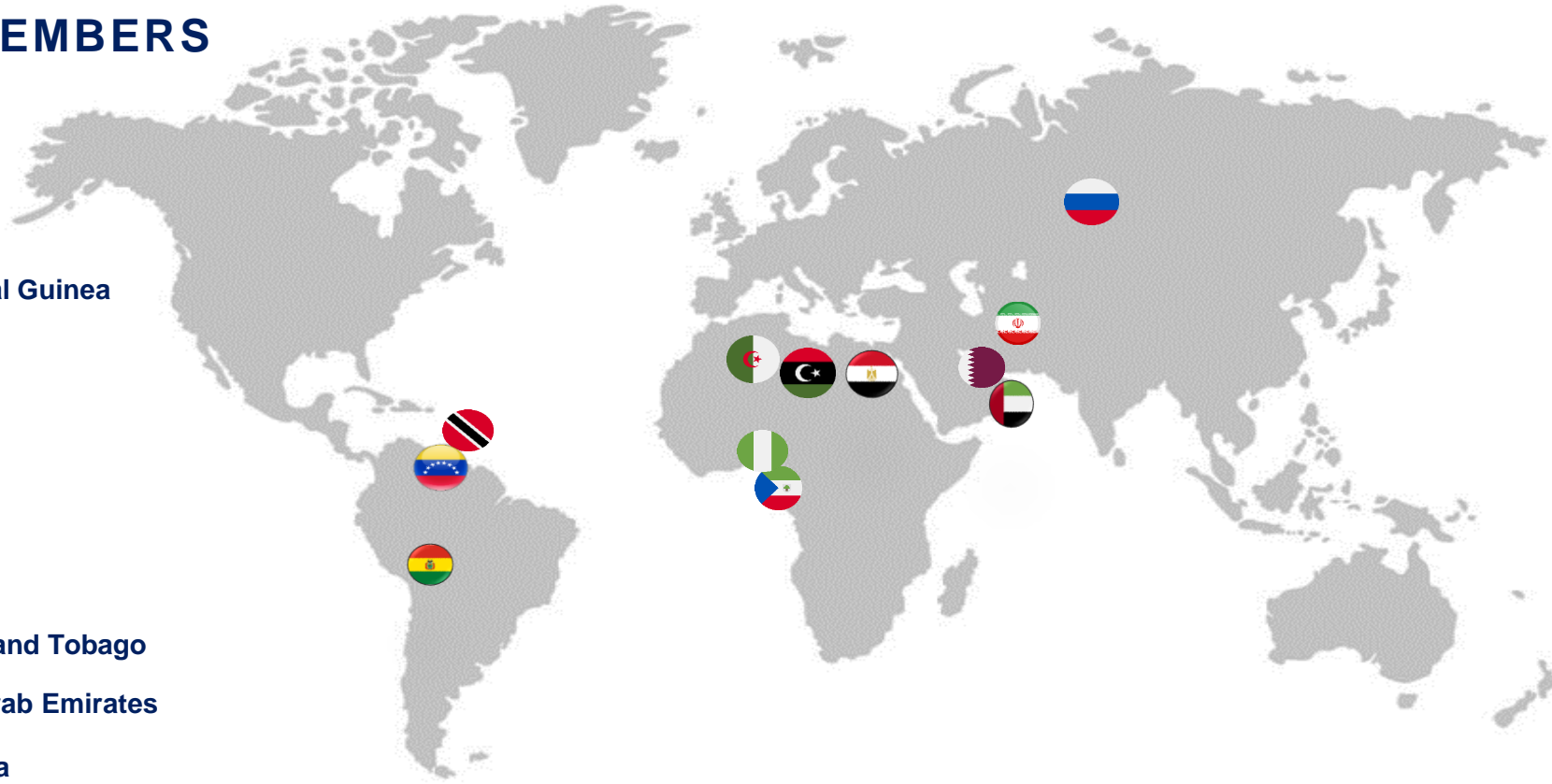
# About Gas Exporting Countries Forum (GECF)

## FULL MEMBERS

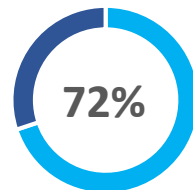
-  Algeria
-  Bolivia
-  Egypt
-  Equatorial Guinea
-  Iran
-  Libya
-  Nigeria
-  Qatar
-  Russia
-  Trinidad and Tobago
-  United Arab Emirates
-  Venezuela

## OBSERVERS

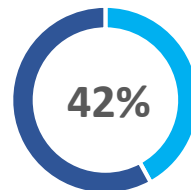
-  Angola
-  Azerbaijan
-  Iraq
-  Malaysia
-  Mozambique
-  Norway
-  Peru



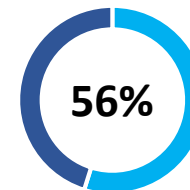
Proven Natural  
Gas Reserves



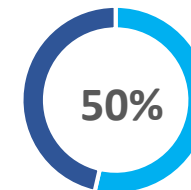
Marketed Gas  
Production



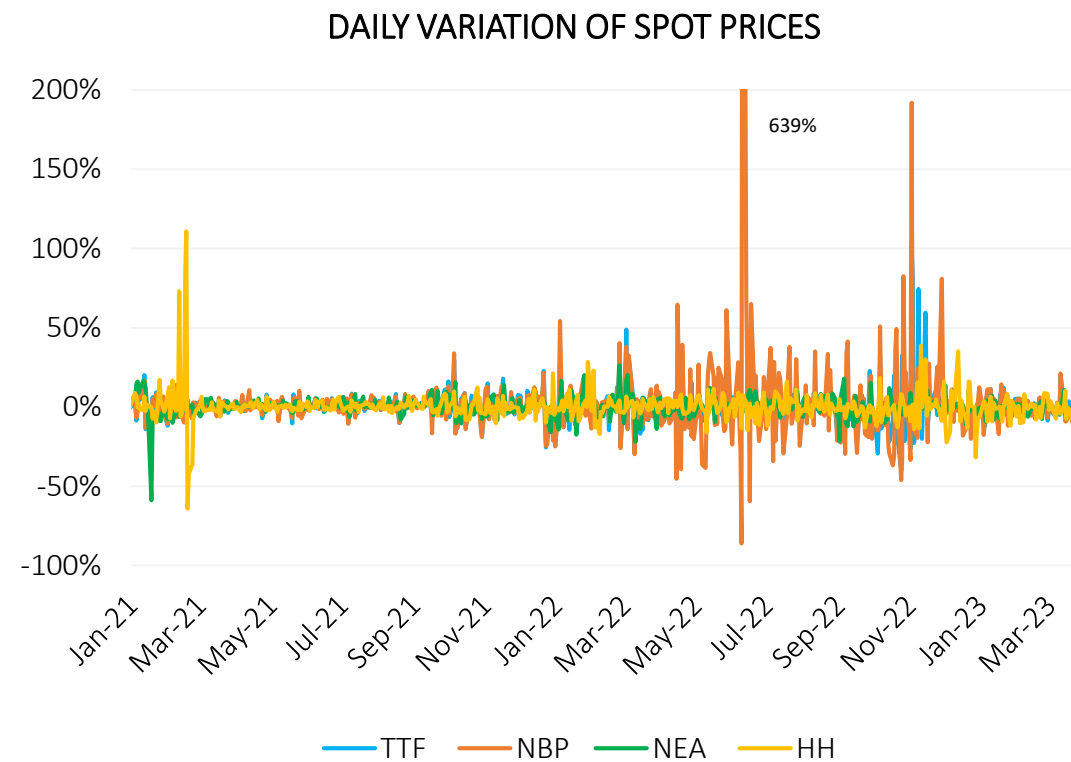
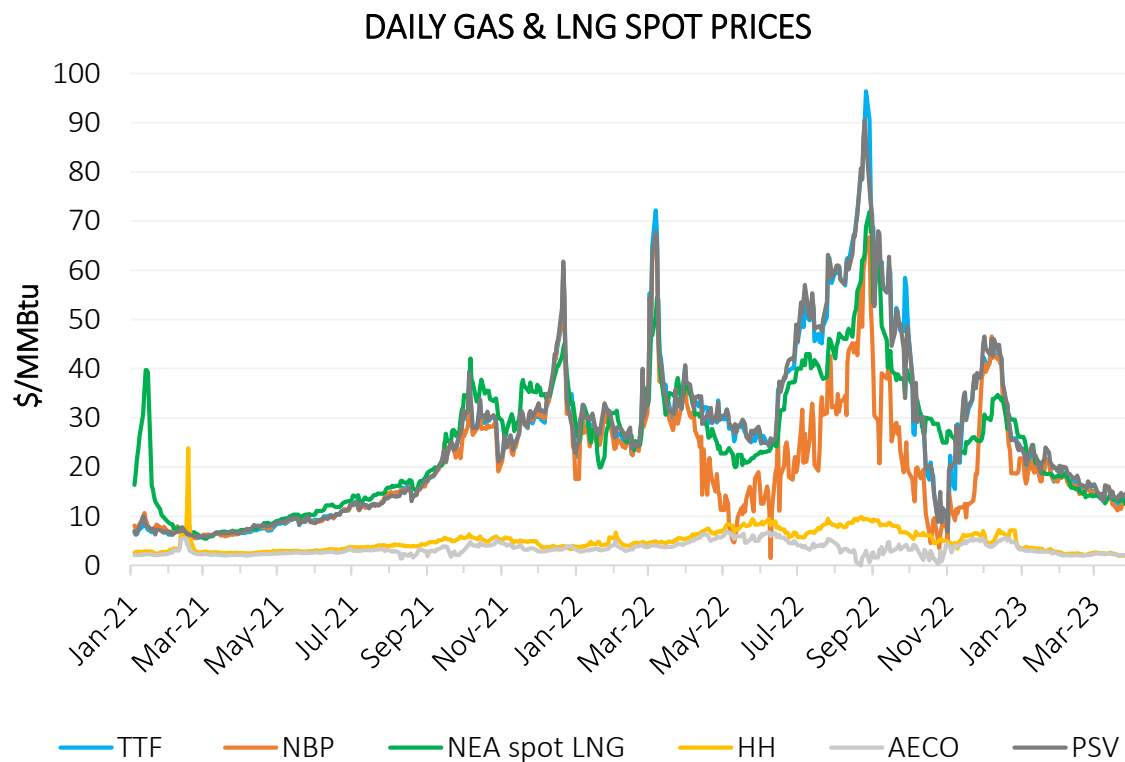
Pipeline Gas  
Exports



LNG Exports



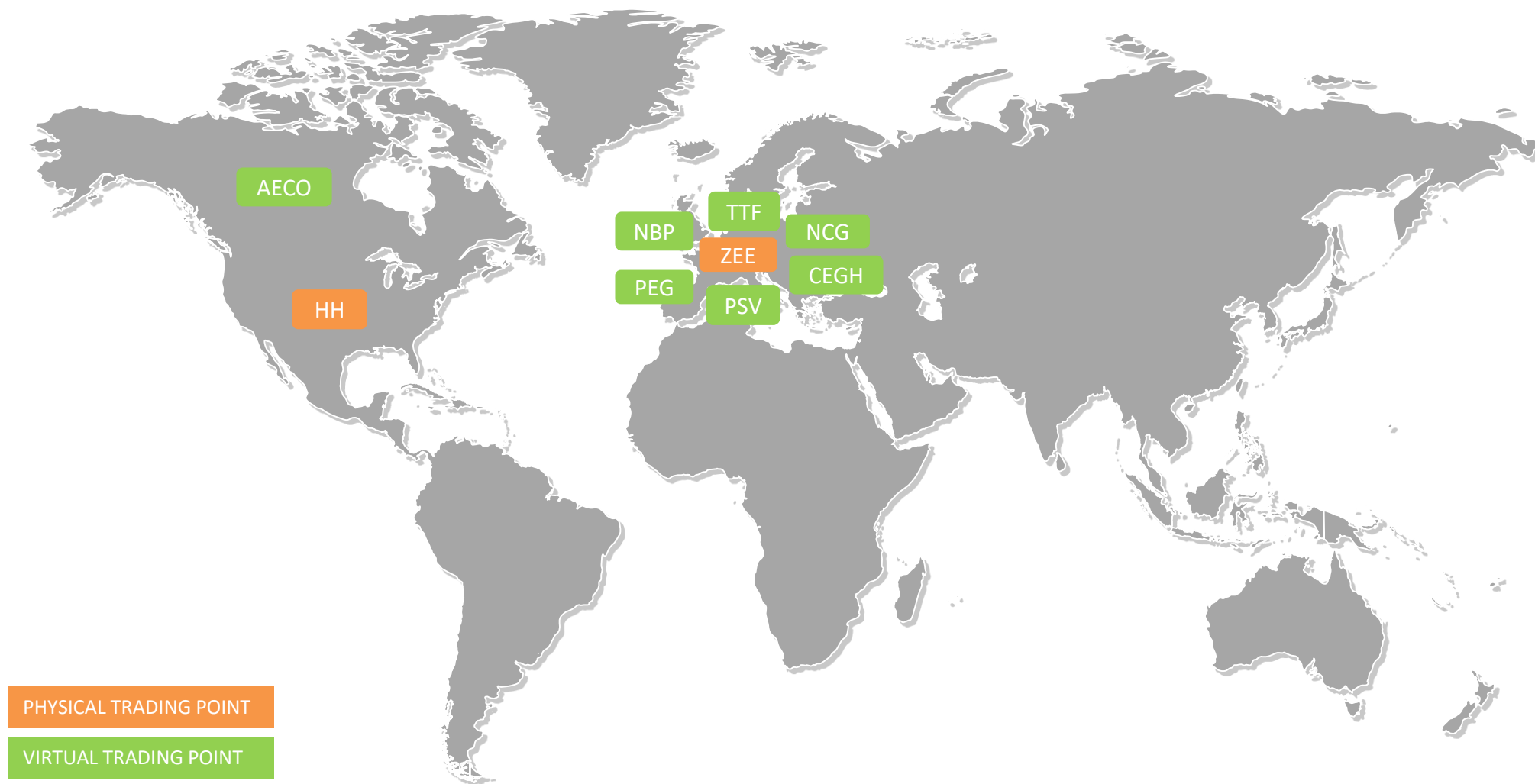
# Gas and LNG spot prices



Source: GECF Secretariat based on data from Argus and Refinitiv Eikon

- Gas and LNG spot prices have surpassed historical highs and recorded extreme volatility in 2022 fueled by geopolitical developments, growing concerns for security of gas supply and a tightening global LNG market. TTF spot gas prices averaged \$38/MMBtu, more than doubling from the previous year. Meanwhile in Asia, LNG spot prices averaged \$33/MMBtu, more than 75% higher y-o-y.
- Spot price volatility was even more rampant in 2022 compared to the previous year. More so, European hub prices experienced much higher volatility compared to Asian LNG spot prices.

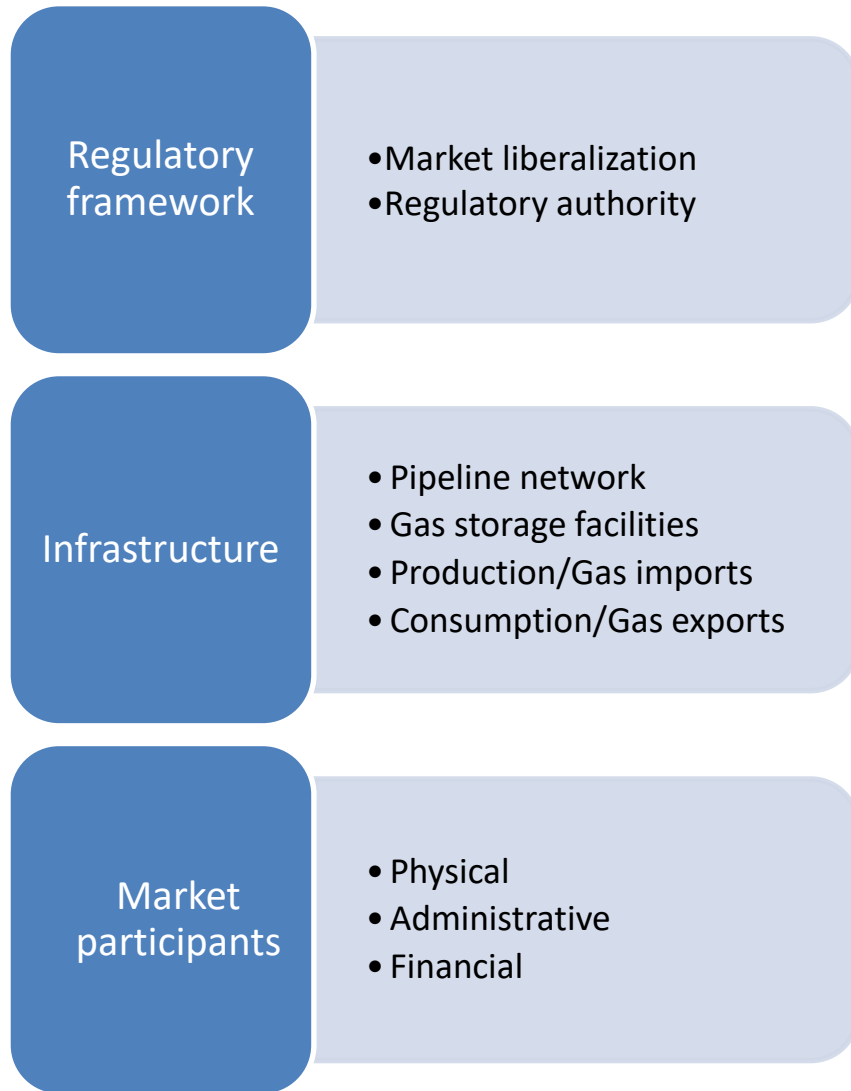
# Overview of major gas hubs



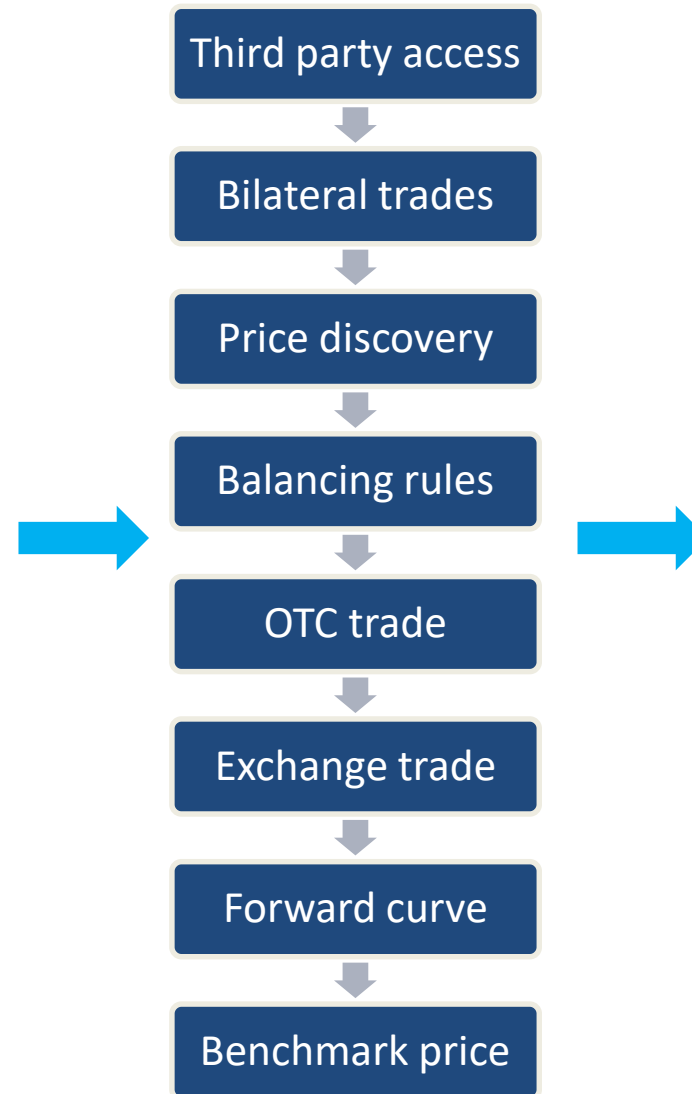
- A gas hub can be defined as a point where the ownership of gas is exchanged between sellers and buyers, and can be physical or virtual.
- Hubs can be classified as balancing, financial or benchmark depending on their stage of development and their function.

# Formation of a gas hub

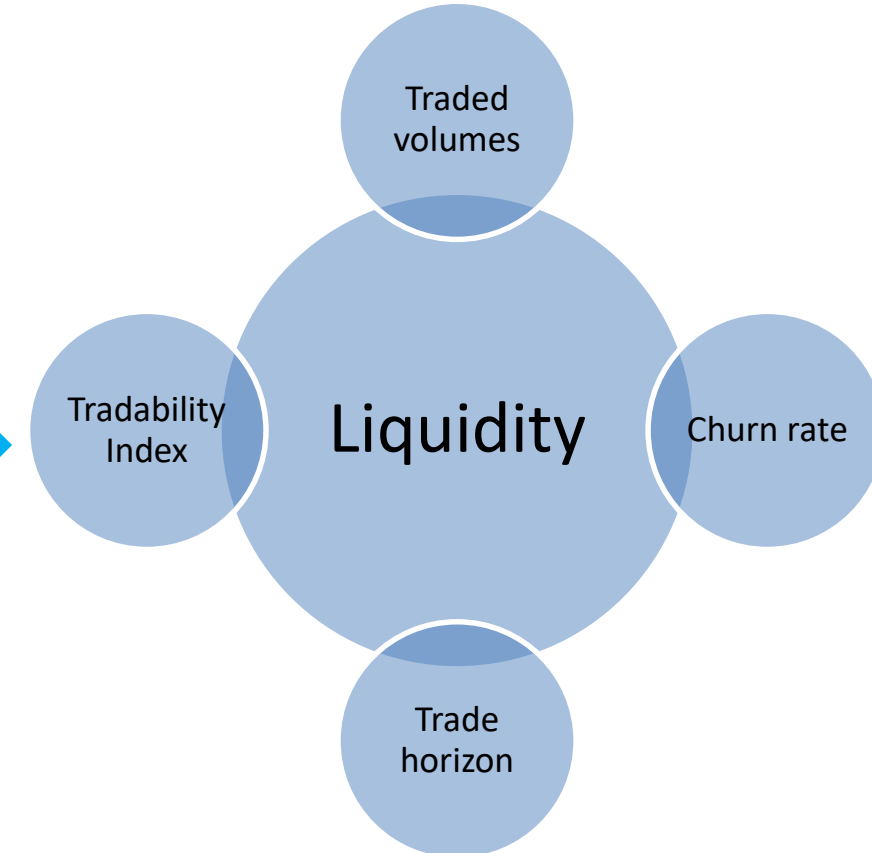
## TECHNICAL ASPECTS



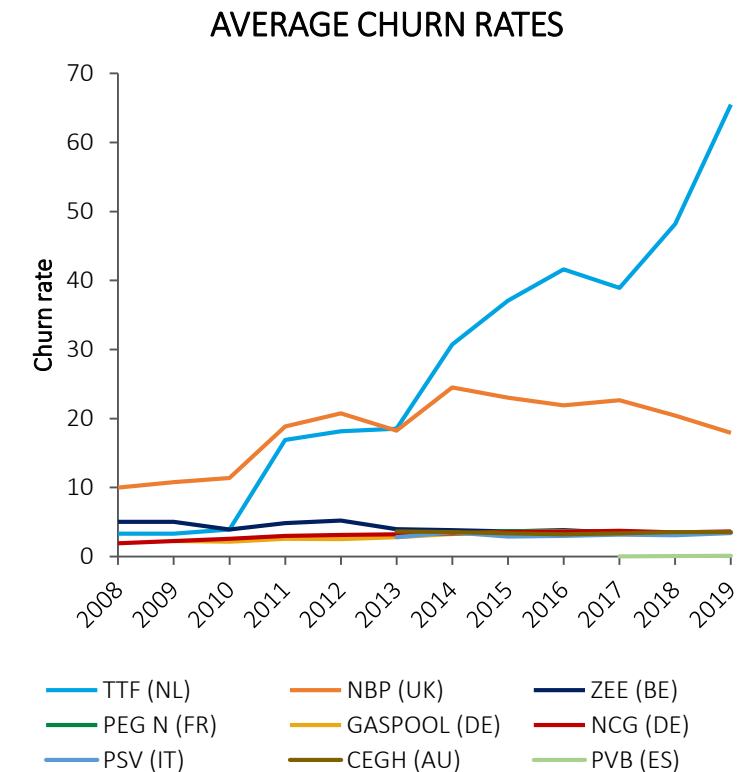
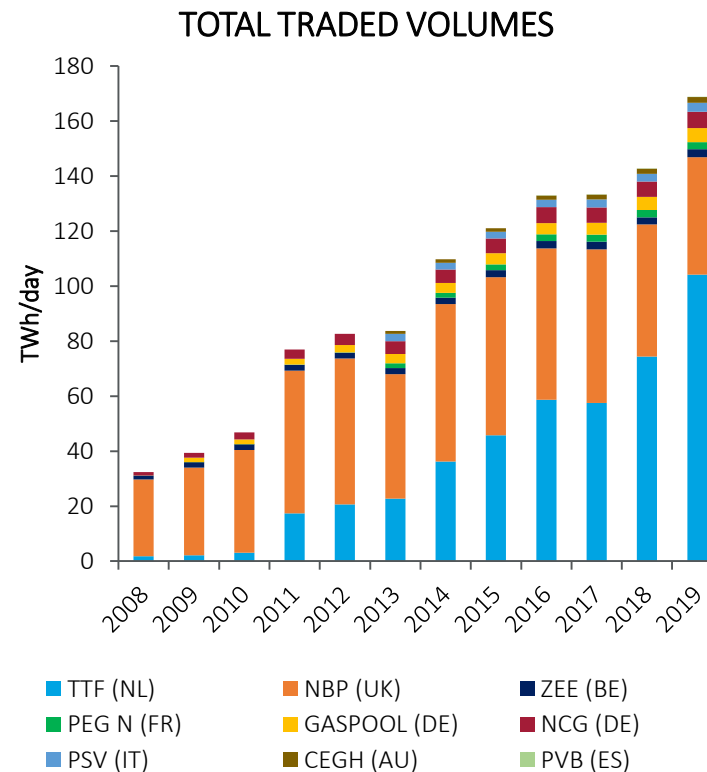
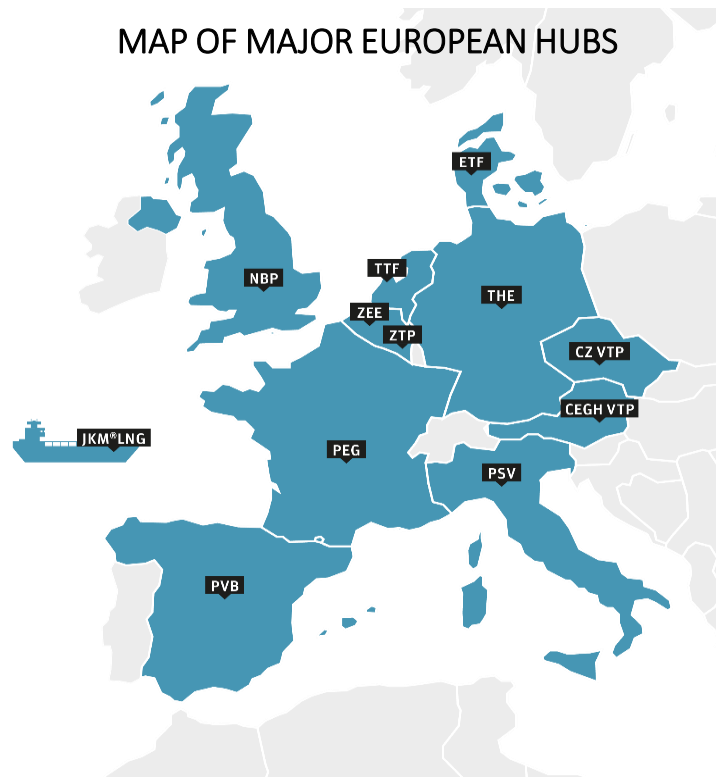
## ESTABLISHING A HUB



## MEASURING SUCCESS

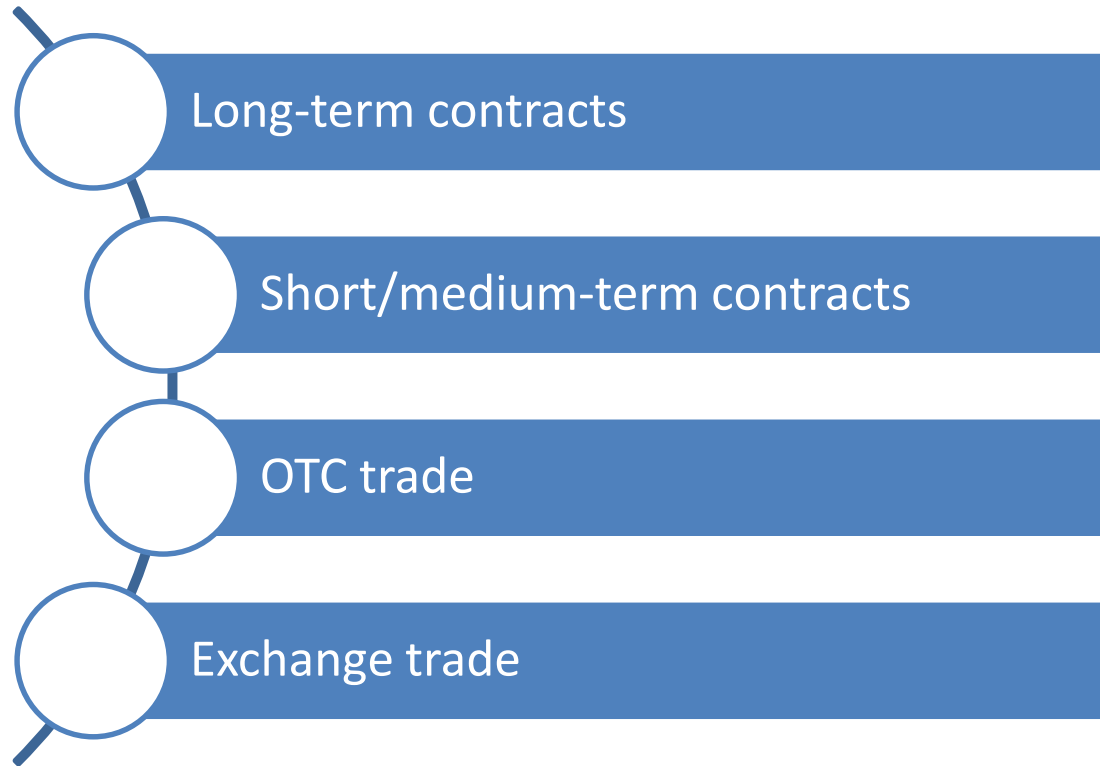


# European gas hubs



Source: GECF Secretariat based on data from WoodMackenzie

- TTF has become the most established and liquid European gas hub with significant traded volumes and good churn rate. Price movements in other European hubs, as well as Asian LNG spot prices, have been closely tracking movements in TTF prices.
- The efficient functioning of European gas hubs may be affected by market interventions that may attempt to correct any supply/demand imbalances. One such government intervention was the Council Regulation (EU) 2022/2578, which established a market correction mechanism (MCM) for TTF derivatives, and has recently been extended to other European hubs.

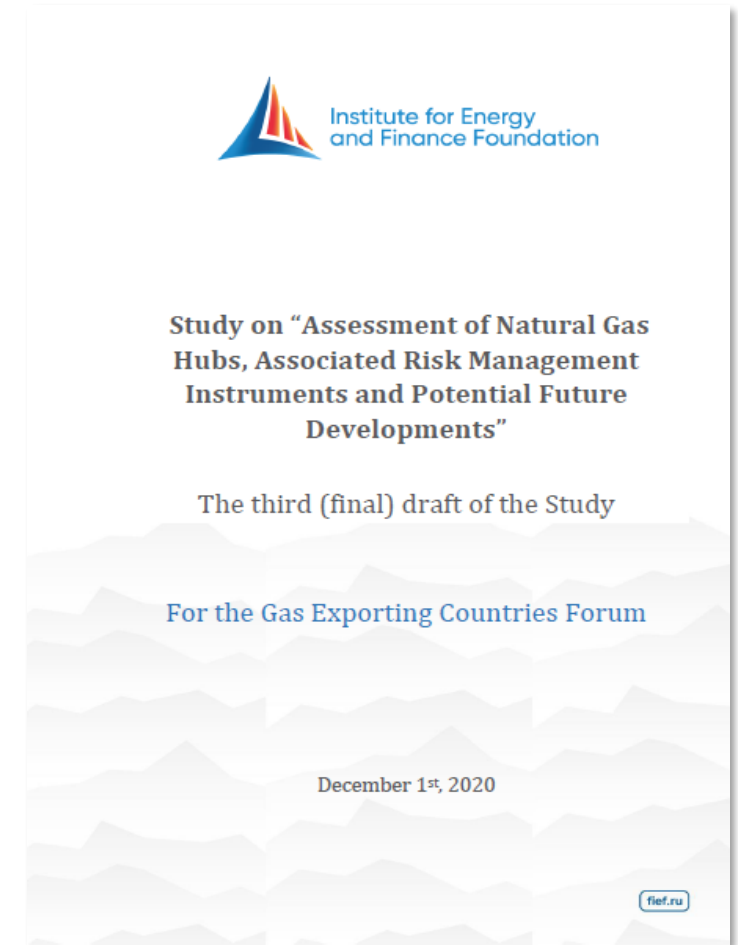


- Trading at hubs can be conducted via over-the-counter (OTC) or exchange trade. Hubs usually have a mix of both instruments depending on its stage of development. Most European hubs were initially based on OTC trade with exchange-traded instruments gradually being integrated.
- An exchange is a specialized trading platform that trades spot and futures products with the gas hub as the delivery point. It matches bids and asks in order to determine the market-clearing price, and a clearing-house provides financial guarantees to execute all trades.





- GECF continues to “support the fundamental role of long-term gas contracts as well as the gas pricing based on oil/oil products indexation to ensure stable investments in development of natural gas resources,” as outlined in its Doha Declaration dated 22 February 2022.
- However, with the increasing role of hub-indexation in the market, the Forum commissioned a study on gas hubs in 2020 in order for GECF Member Countries to gain a clearer understanding of price formation at gas hubs, as well as the potential risk management strategies that can be used to optimize their portfolios. This study entitled “*Assessment of Natural Gas Hubs, Associated Risk Management Instruments and Potential Future Developments*” was conducted by FIEF.



# Creating a gas hub: the case of Turkey



## PIPELINE GAS IMPORT CAPACITY

Russia: TurkStream – 31.5 Bcm  
BlueStream – 16 Bcm  
Azerbaijan: TANAP 16 Bcm  
Iran – 14 Bcm

## LNG IMPORT CAPACITY

Aliaga – 10.9 mtpa  
Marmara Ereğlisi – 10.1 mtpa  
Dortyol (FSRU) - 4.1 mtpa  
Cakmakli (FSRU) – 3.8 mtpa

## GAS RESERVES

Black Sea – 710 Bcm

## GAS PRODUCTION

Expected to reach 1.1 bcm in 2023

## GAS STORAGE

Existing - 4.6 Bcm  
Under construction - 4 bcm

## REGULATORY FRAMEWORK

Turkey's Energy Market Regulatory Authority (EMRA)  
Energy Exchange Istanbul (EXIST)

- Turkey has existing gas infrastructure including pipeline gas imports from Russia, Azerbaijan and Iran, four LNG import terminals, gas reserves and underground gas storage.
- In addition, gas production from the Black Sea is expected to start this year.

## Strengths

- Geographic location
- Regulatory framework - existing regulatory authority and energy exchange
- Existing infrastructure – LNG import terminals, pipeline gas imports, storage

## Weaknesses

- Insufficient pipeline capacity infrastructure
- Lack of market participants – only one firm importing LNG
- Regulated market – need to liberalize

## Opportunities

- Attract investment to develop gas infrastructure
- Attract new market players

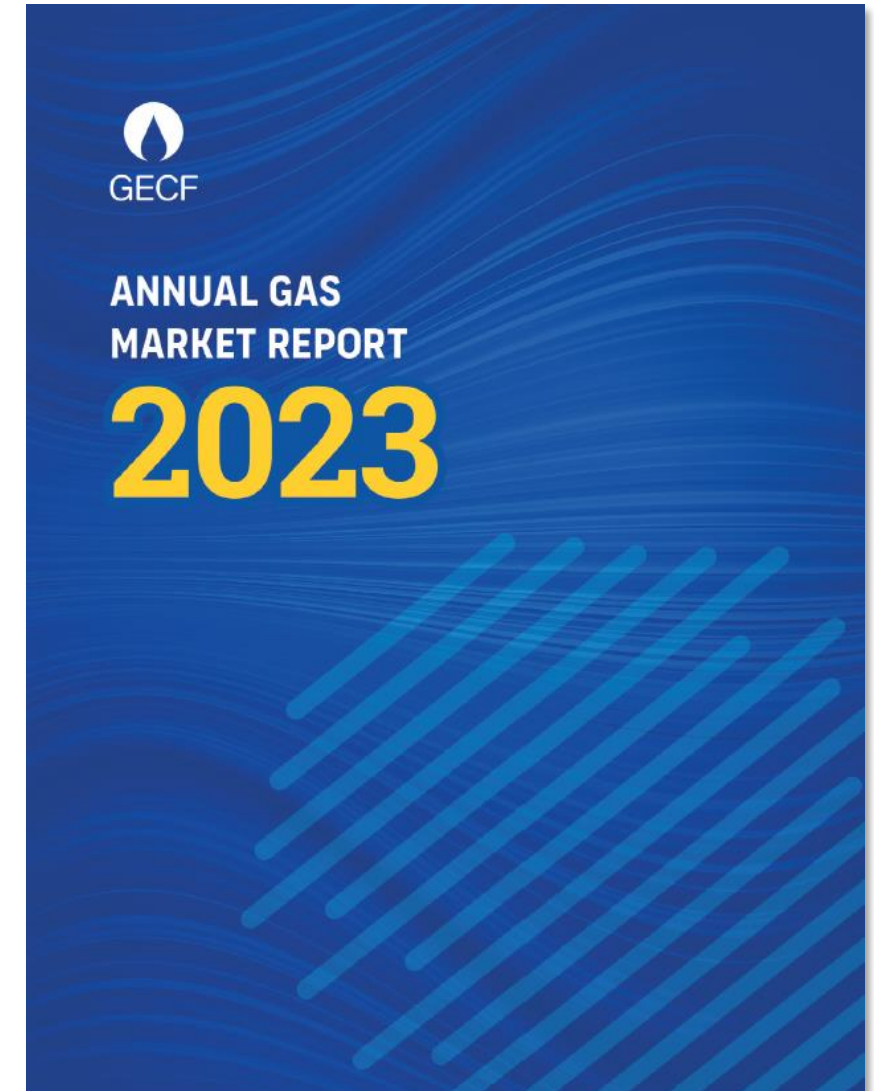
## Threats

- EU regulations
- Economic and technological restrictions

- Gas hubs has evolved over the past decades in Europe and North America, from acting as balancing points to becoming benchmark hubs and playing a crucial role in gas price setting based on market fundamentals.
- The creation of a gas hub is highly dependent on several factors including regulatory framework, infrastructure and market participants, with its success underpinned by its liquidity.
- Trading at hubs can be conducted via OTC or exchange trade, and used as a risk management tool.
- Turkey may be poised to become a gas hub in the future particularly due to its unique geographic location however, there will need to be further infrastructure development and opening up of the market to more participants.



|                     |                 |
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| Gas Production      | Gas Trade       |
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